

REMARKS

Claims 1-19 are currently pending in the application. Claims 1-3 and 5-6 have been amended. New claims 7-19 have been added. In the December 1, 2006, Office Action, all claims were rejected. More specifically, the status of the application in light of this Office Action is as follows:

- (A) Claims 1, 3, and 6 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,900,947 to Weiner et al. ("Weiner");
- (B) Claims 2 and 5 were rejected under 35 U.S.C. 103(a) as being unpatentable over Wiener, and further in view of U.S. Patent No. 7,104,965 to Jiang et al. ("Jiang"); and
- (C) Claims 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Wiener, and further in view of U.S. Publication No. 20050083163 to Shrier ("Shrier").

Amended claim 1 is directed toward a pulser circuit for generating an electrical pulse of short duration for use in an atom probe that includes a circuit comprising at least a first node and a voltage supply for charging the first node. The voltage supply is configured to provide outputs at different voltages and the voltage of the outputs is selectable. The circuit further includes a switching network having a first switch operable between a conductive state for shorting the first node to a grounded node and a nonconductive state for opening the circuit between the first node and the grounded node, and an RC network having a time constant of less than 33 microseconds. The RC network includes at least one resistor connected between the first node and the voltage supply. The switch is in a nonconductive state to charge the RC network and the switch is in a conductive state to discharge the RC network, thereby generating the electrical pulse. The circuit still further includes a shaping network configured to provide pulses with different voltage amplitudes at different pulse frequencies. The pulse voltage amplitudes and pulse frequencies are selectable.

Weiner discloses a Marx high voltage generator that has a series of resistors and capacitors with switches that can be sequentially operated (abstract; col. 4, lines -15). As stated in the above referenced Office Action, Weiner fails to teach or suggest providing pulses with selectable amplitudes and shapes. **Jiang** discloses a controller for providing pulses of selectable **amperage amplitude** (from 0-2 amps) and shape for human nerve mapping (abstract; col. 5, lines 18-23; col. 6, lines 47-57). Jiang does not disclose a shaping network configured to provide pulses with different voltage amplitudes at different pulse frequencies, wherein the pulse voltage amplitudes and pulse frequencies are selectable.

Furthermore, not only is the controller in Jiang configured to control amperage amplitude instead of voltage amplitude, but the controller is configured to control a pulse generator (Figure 1A) - not configured to control the output of a Marx generator. In a Marx generator, the closer a capacitor is to the charging power supply, the faster it will charge (http://en.wikipedia.org/wiki/Marx_generator). Accordingly, each capacitor in the generator charges at a different rate, making control of an amplitude and shape of a pulse problematic and complicated. Accordingly, one skilled in the art would not be motivated to replace the pulse generator in Jiang with a Marx generator nor to combine the controller in Jiang with a Marx generator. For at least this reason, claim 1 is patentable over the cited references. Claims 2-4 and 7-8 depend from claim 1. For at least this reason, claims 2-4 and 7-8 are also patentable over the cited references.

Amended claim 5 is directed toward an atom probe system that includes an atom probe with a micro-channel plate and an analysis aperture. The system further includes a specimen positioned proximate to the analysis aperture and a circuit comprising at least a first node positioned to create at least a portion of a voltage potential between the specimen and the analysis aperture. The system still further includes a voltage supply for charging the first node. The voltage supply is configured to provide outputs at different voltages and the voltage of the outputs is selectable. The system yet further includes a switch operable between a conductive state for shorting the first node to a grounded node

and a nonconductive state for opening the circuit between the first node and the grounded node. The switch includes at least one of a transistor and a diode. The system still further includes an RC network, comprising at least one resistor connected between the first node and the voltage supply. The switch is in a nonconductive state to charge the RC network and the switch is in a conductive state to discharge the RC network, thereby generating the electrical pulse to increase the voltage potential between the specimen and the analysis aperture.

Weiner or Jiang, individually or combination, fail to teach or suggest an atom probe system with an RC network that discharges to produce an electrical pulse to increase the voltage potential between the specimen and the analysis aperture. Accordingly, for at least this reason, claim 5 is patentable over the cited references. Claims 9-13 depend from claim 5. For at least this reason, claims 9-13 are also patentable over the cited references.

Amended claim 6 includes features similar to claims 1 and 5. Accordingly, claim 6 is also patentable over the cited references. Claims 14-19 depend from claim 6. For at least this reason, claims 14-19 are also patentable over the cited references.

In view of the foregoing, the pending claims comply with 35 U.S.C. § 112 and are patentable over the applied art. The applicant accordingly requests reconsideration of the application and a Notice of Allowance. If the Examiner has any questions or believes a telephone conference would expedite prosecution of this application, the Examiner is encouraged to call the undersigned at (206) 359-6477.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 50-0665, under Order No. 392458107US1 from which the undersigned is authorized to draw.

Dated: 1 March 2007

Respectfully submitted,

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